Project objectivesRamallah city in is equipped with video surveillance cameras installed on different roads and highways, and in this project we will implement a smart traffic monitoring system using artificial intelligence and deep learning tools,and the implemented system will be able to achieve the following :

* Measuring the real time of traffic parameters to insure a fluid traffic and avoid accidents.
* Adaptive control: the system provide a real data about the traffic statues for the descision makers to let them managet the traffic systems depends on real data , they will make a better decisions about adjustments to systems including traffic lights, on-ramp signaling, and bus rapid transit lanes.

# Dataset description:

Training dataset : images of car crash, in various weather states were labeled to train the YOLO algoritm on it . images are gathered in different cases (early morning, evening, rainy weather, fog weather).

Input Dataset: the data is images from videos by dashboard-mounted cameras in Ramallah streets,

Output data: an hourly report that saved in a adata base

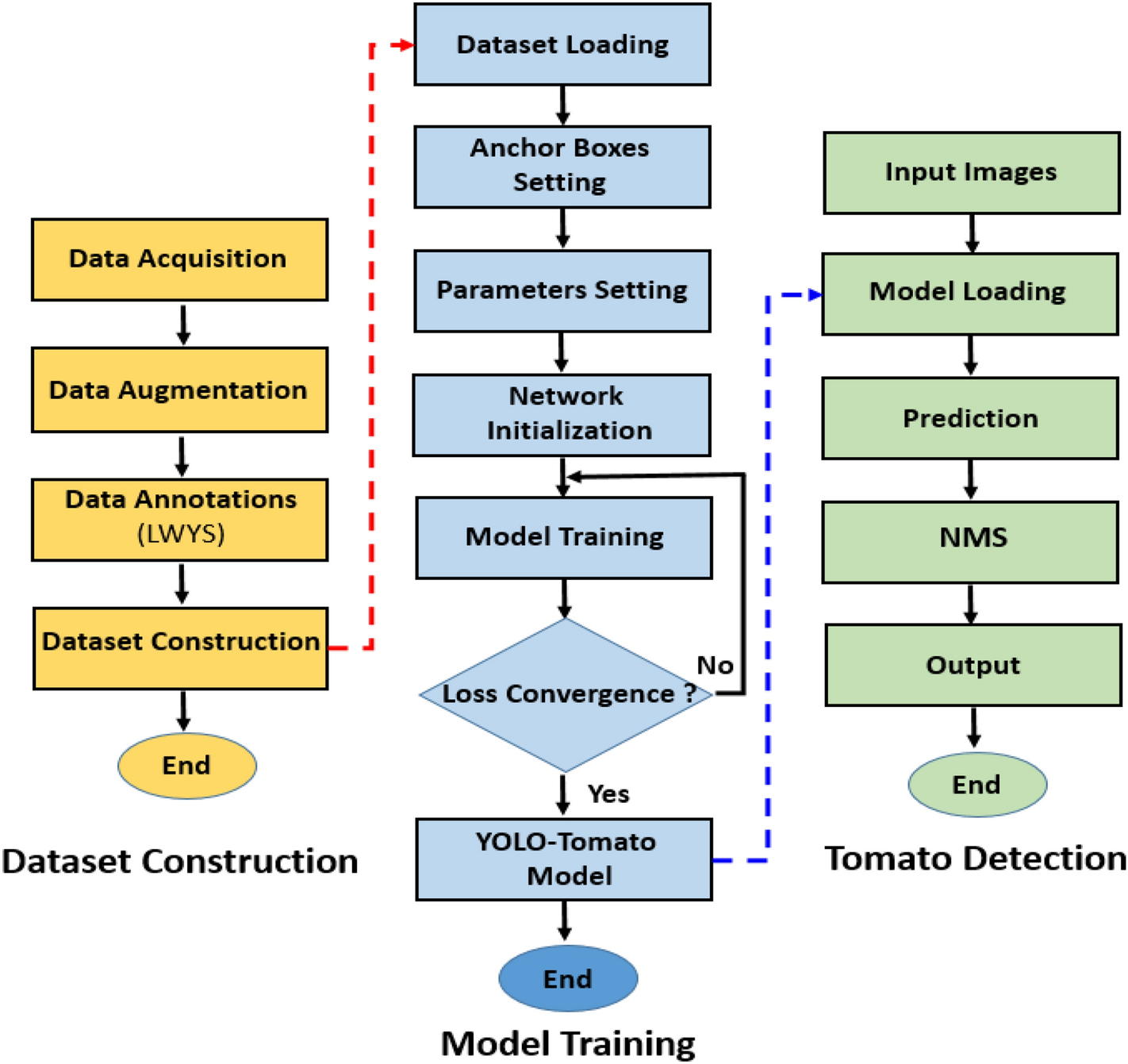
# Determine output/ deliverable

the system will give the following outputs :

camera location, time, date, day, number of car each hour ,accidents.

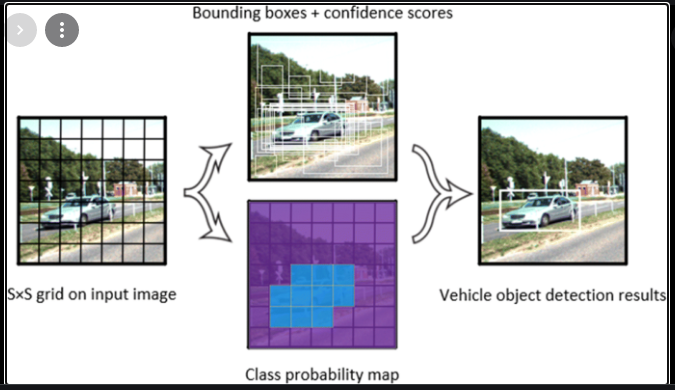
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| camera name | time | date | day | number of cars | number of car accidents |
| Mun Cam | 12:00 AM | 10/12/2021 0:00 | Tuesday | 205 | 0 |
| Mun Cam | 1:00 AM | 10/12/2021 1:00 | Tuesday | 145 | 0 |
| Mun Cam | 2:00 AM | 10/12/2021 2:00 | Tuesday | 98 | 0 |
| Mun Cam | 3:00 AM | 10/12/2021 3:00 | Tuesday | 64 | 0 |
| Mun Cam | 4:00 AM | 10/12/2021 4:00 | Tuesday | 73 | 0 |
| Mun Cam | 5:00 AM | 10/12/2021 5:00 | Tuesday | 120 | 0 |
| Mun Cam | 6:00 AM | 10/12/2021 6:00 | Tuesday | 296 | 0 |
| Mun Cam | 7:00 AM | 10/12/2021 7:00 | Tuesday | 498 | 0 |
| Mun Cam | 8:00 AM | 10/12/2021 8:00 | Tuesday | 527 | 0 |
| Mun Cam | 9:00 AM | 10/12/2021 9:00 | Tuesday | 696 | 0 |
| Mun Cam | 10:00 AM | 10/12/2021 10:00 | Tuesday | 827 | 0 |
| Mun Cam | 11:00 AM | 10/12/2021 11:00 | Tuesday | 888 | 0 |

**Sketching (wireframes)**



**Car accident detection**

**YOLO algorithm works using the following three techniques**:

* Residual blocks: the image is divided into various grids.
* Bounding box regression: A bounding box is an outline that highlights an object in an image.
* Every bounding box in the image consists of the following attributes:
* Width (bw), Height (bh), Class (for example, person, car, traffic light, etc.)- This is represented by the letter c., Bounding box center (bx,by)
* Intersection Over Union (IOU)
* Intersection over union (IOU) is a phenomenon in object detection that describes how boxes overlap. YOLO uses IOU to provide an output box that surrounds the objects perfectly
* 

# **Front User Name**

